

# Field notes on the Odonata around a fresh water lake in Western Himalayas<sup>1</sup>

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(With a text-figure)

Distribution of Odonata around a fresh water lake, namely, Renuka Lake, Parush Ram Tal (Perennial pond) and two small streams have been studied in the field. Notes have been made on the behaviour of the dragonflies present around these habitats.

## INTRODUCTION

It is well known that the shape and size of a body of water are important in habitat selection of Odonata—and normally the distribution of dragonflies is affected by the nature of aquatic habitat available, Corbet (1962). Kumar (1972) discussed parochialism in certain species in the tropics which confine themselves to the larval habitat available in the form of streams, permanent standing water bodies or temporary monsoon ponds.

The Renuka Lake (Dist. Sirmaur, H.P.) is a fresh water lake at an altitude of c 650 m, and is situated in the Renuka Wild Life Sanctuary. The lake is about 1 Km in length and approximately 300 m in width and has an irregular shore line. The lake is fed by a small stream on its south-west side. The stream originates from a perennial pond, the Parush Ram Tal, about 100 m in diameter which in turn is fed by a hill stream at its south-eastern side (fig. 1).

The lake provides an excellent breeding ground for dragonflies. The Odonata fauna

of the lake and its vicinity comprise about 31 species (Kumar & Juneja 1976). Field observations on the distributional pattern of the dragonflies around Renuka Lake have been recorded in the present study. The distribution can be broadly classified into three groups (fig. 1).

### *Odonata species :*

- (1) along the stream,
- (2) at the perennial pond with open banks,
- (3) and around the irregular lake shore.

### 1. Species near the Stream :

- (i) *Both banks with vegetation :*  
(Fig. 1, Stretch A & C).

Only a few species were observed in stretch A of the hill stream which was about 1.5 mt. in width and approximately 50 cm. in depth and had a sand and pebble bed shaded by bushes on either side. The most common species was *Neurobasis chinensis chinensis* (Linn.) which was seen perching on overhanging vegetation or fluttering over the stream. The other species observed and collected were *Bayadera indica* (Selys), *Nepogomphus modestus* (Selys) and *Trithemis festiva* (Ramb.).

The stretch C of the stream (the link stream between Parush Ram Tal and Renuka Lake)

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is also almost like stretch A of the stream except that it is a deep channel with scarce vegetation. The common species at stretch C are *N. chinensis chinensis*, and *Rhinocypha quadrimaculata* Selys. At the place where this stream merges with the Renuka Lake *Pseudagrion decorum* (Rambur) and *Coenagrion dyeri* Fraser were most frequent, flying about 10 cm above the water surface. *T. festiva* was also actively flying nearby.

(ii) *with open beds* (Fig. 1, Stretch B) :

This stretch of the feeder stream to Parush Ram Tal has a number of *R. quadrimaculata* adults resting on boulders on the bank. *P. decorum* and *C. dyeri* were flying in abundance low over the water surface, where the stream merges into the Pond. A few *T. festiva* were also flying in the short stretch.

2. **Species around the Perennial pond** (Fig. 1) :

Parush Ram Tal has an open and shallow bank line and in post monsoon period it extends almost upto the surrounding Road. The western side of the pond has a little deep shore line and the species frequent there are *Ceragrion coromandelianum* Fabr., *Pseudagrion rubriceps* (Selys), *Orthetrum pruinosum neglectum* (Ramb.), *Orthetrum triangulare triangulare* (Selys), *Brachythemis contaminata* (Fab.), *Crocothemis s. servilia* (Drury) and *Trithemis aurora* (Burm.). A few *Ictinogomphus rapax* (Rambur) were also seen.

*C. coromandelianum*, *P. rubriceps*, *P. decorum*, *Ischnura delicata* (Hagen), *Ischnura forcipata* Morton, *I. rapax*, *Orthetrum sabina* (Drury) and *T. festiva* were common on the wing towards the shallow eastern part of the pond. *P. decorum* and *O. sabina* were frequent over the open surface of water while the other species were flying low or perching amidst the partially submerged vegetation on the bank. A few *B. contaminata* were seen on the road around the pond. Often the adults of *O. sabina* were

observed clashing and chasing each other over the open water surface of the pond.

3. **Species around the irregular Lake Shore** (Fig. 1) :

(i) *Among the Reeds (marshy area) :*

The most common species are *Neurothemis tullia tullia* Drury and *B. contaminata*. A large number of emerging adults of *N. tullia tullia* were collected in the month of April. The other species flying among the reeds are *C. coromandelianum*, *Ceragrion cerinorubellum* Fab. (very rare), *O. pruinosum neglectum*, *C. servilia servilia*, *T. aurora*, *Diplacodes nebulosa* (Fab.) and *Acisoma panorpoides panorpoides* (Ramb.) (Rare). All these species were observed either perching on the partially submerged vegetation or flying and sometimes ovipositing in the shallow water. *B. contaminata* and *T. aurora* were seen perched in large numbers in the dense vegetation on the eastern side of the lake which generally remains dry.

(ii) *Along the Deep Shore Line :*

Species hovering and patrolling along the shore line of the lake are *P. rubriceps*, *Libellago lineata lineata* (Burm.), *O. pruinosum neglectum*, *B. contaminata*, *C. servilia servilia*, *Orthetrum brunneum brunneum* (Fons.) and *T. aurora*. Among these *L. lineata lineata* and *P. rubriceps* were observed flying lazily at a low level above the surface of the Lake but would not go beyond a few metres from the shore line. A large number of *P. rubriceps* were observed in tandem and in process of ovipositing in the submerged shore vegetation. The adults of larger Anisoptera would venture further away from the shore and *B. contaminata* and *T. aurora* were frequently observed on the open water surface towards the middle of the Lake. Some adults were seen chasing each other violently over the lake surface and they would often do aerobatics over the water surface. However,

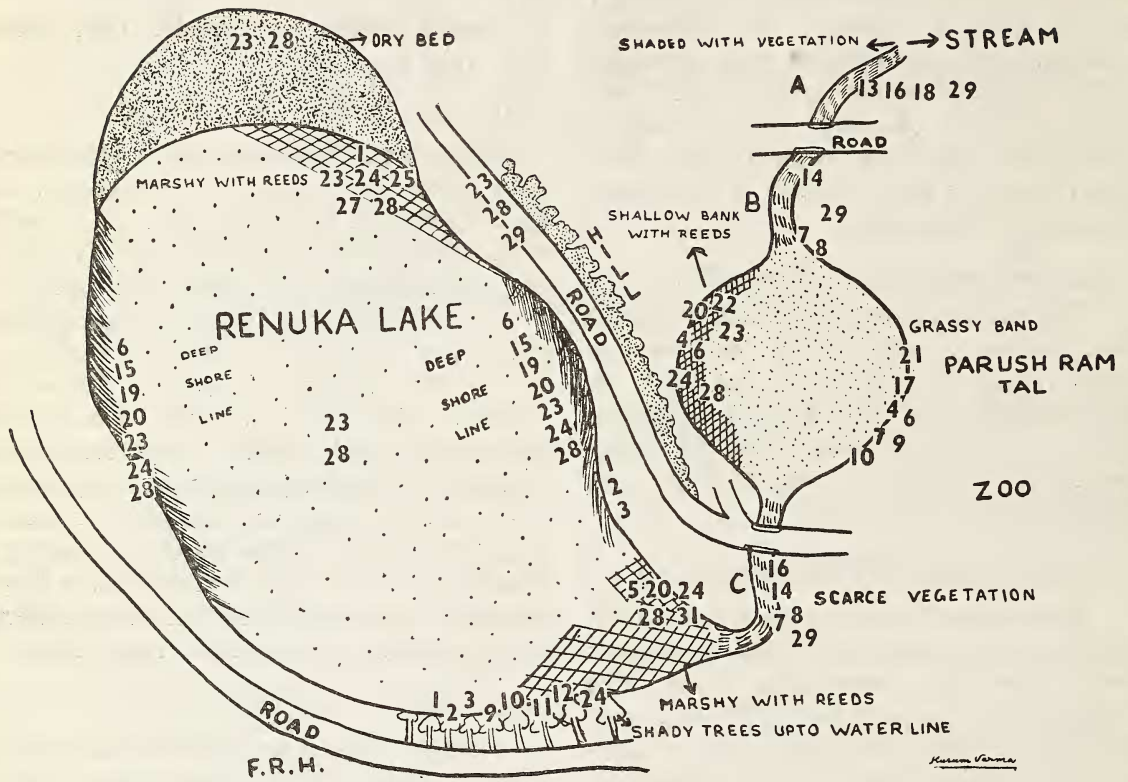


Fig. 1.

1. *Copera annulata* (Selys); 2. *Copera marginipes* (Ramb.); 3. *C. vittata* (Selys); 4. *Ceriagrion coromandelianum* Fabr.; 5. *C. cerinorubellum* (Brauer); 6. *Pseudagrion rubriceps* Selys; 7. *P. decorum* (Ramb.); 8. *Coenagrion dyeri* Fraser; 9. *Ischnura delicata* (Hagen); 10. *I. forcipata* Morton; 11. *I. senegalensis* (Ramb.); 12. *Agriocnemis pygmaea* (Ramb.); 13. *Bayadera indica* (Selys); 14. *Rhinocypha quadrimaculata* (Selys); 15. *Libellago lineata lineata* (Burm.); 16. *Neurobasis chinensis chinensis* (Linn.); 17. *Ictinogomphus rapax* (Ramb.); 18. *Nepogomphus modestus* (Selys); 19. *Orthetrum b. brunneum* (Fons.); 20. *O. pruinatum neglectum* (Ramb.); 21. *O. s. sabina* (Drury); 22. *O. t. triangulare* (Selys); 23. *Brachythemis contaminata* (Fabr.); 24. *Crocothemis s. servilia* Drury; 25. *Diplacodes nebulosa* (Fabr.); 26. *Neurothemis fulvia* (Drury); 27. *N. t. tullia* Drury.; 28. *Trithemis aurora* (Burm.); 29. *T. festiva* (Ramb.); 30. *T. pallidinervis* (Kirby); 31. *Acisoma panorpoides panorpoides* (Ramb.).



oviposition was not observed at the open surface of the lake.

(iii) *Away from the water among the shady vegetation :*

The western part of the Renuka Lake has a dense growth of trees with dense vegetation underneath. A large number of smaller Zygopteran species were observed flying lazily among the shaded vegetation. Common species are *Copera annulata* (Selys), *C. marginipes* (Ramb.), *C. vittata* (Selys), *I. delicata*, *I. forcipata*, *Ischnura senegalensis* (Ramb.), *Agriocnemis pygmae* (Ramb.) and *C. servilia servilia*. The adults are most active on wing in the fore-noon. Perching adults of *C. vittata* were also observed frequently on the hedge of the Forest Rest house and among the vegetation on the surrounding hill, which were approximately 20-25 m away from the water site.

(iv) *On the Road and Boulders around the Lake :*

A large number of adults of *B. contaminata*, *T. aurora* and *C. servilia servilia* were observed flying a few centimetres above the road surface or perching on large boulders with spread wings especially so if they were exposed to the sunshine. It was observed that in case of *B. contaminata* the adults along the road were predominantly females while the males were generally patrolling along the lake shore. However, in case of *T. aurora* males were conspicuous, perching on the boulders. A few *T. festiva* were also observed.

#### DISCUSSION AND CONCLUSION

The distribution of 31 species of Odonata at and around Renuka Lake has generally demonstrated that the species restrict themselves either to the flowing water or stable water bodies. *B. indica*, *N. chinensis chinensis*,

*R. quadrimaculata* and *N. modestus* were restricted in their activities to the streams while *T. festiva* was irregularly distributed. The composition of species among smaller, shallow and open bordered Parush Ram Tal and the larger Renuka Lake also differs. The species composition of Parush Ram Tal is poorer than the Renuka Lake. *I. rapax* was restricted only to the Parush Ram Tal while species of genus *Copera*, *C. cerinorubellum*, *L. lineata lineata*, *O. brunneum brunneum*, *N. tullia tullia* and *A. panarpoides panarpoides* were confined to the Lake. The distribution of the remaining species overlapped.

It is evident from the above observations that the adults of those species which have their larvae in hill streams, namely *N. chinensis chinensis*, *R. quadrimaculata* and *B. indica* (Kumar 1972), restrict themselves to the streams ; while some of the riverine species like *O. brunneum brunneum*, *L. lineata lineata*, *P. rubriceps*, etc., have generally restricted themselves to the straight deep shore line of the Renuka Lake. Similar behaviour of the adults of other riverine species has been discussed by Corbet (1962). The typical, standing water breeding species like *C. marginipes*, *C. coromandelianum*, *I. delicata*, *A. pygmae*, *I. rapax*, *O. sabina sabina*, *B. contaminata* and *A. panarpoides panarpoides* etc., (Kumar 1972, 1973a, 1973b) seem to confine themselves to the reeds and marshy vegetation at the Renuka Lake and Parush Ram Tal.

In addition to the site selection and larval habitat preference, which have been discussed here, other factors responsible for the habitat selection and oviposition in dragonflies have been dealt in detail by Corbet (1962). Presence or absence of a particular type of shore vegetation may also be an important factor in such habitat preference especially in those species which oviposit endophytically or have their larvae living amidst the upright vegetation.

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